BROADCAST tools INC

Installation and Operation Manual

Silence Sentinel® Basic

Manual update: 03/07/2011
Firmware version: PIC1.07 or greater.
If you need a firmware upgrade, contact Broadcast Tools®

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INTRODUCTION

Thank you for your purchase of a Broadcast Tools® "Silence Sentinel® Basic" (referred to as the Silence Sentinel® Basic throughout this manual). We're confident that this product will give you many years of dependable service. This manual is intended to give you all the information needed to install and operate the Broadcast Tools® "Silence Sentinel® Basic".

SAFETY INFORMATION

Only qualified technical personnel should install Broadcast Tools products. Any attempt to install this device by a person who is not technically qualified could result in a hazardous condition to the installer or other personnel or damage Broadcast Tools product or other equipment. Please ensure that proper safety precautions have been taken before installing this device. If you are unfamiliar with this type of equipment, please contact a properly qualified engineer to handle the installation and setup of the Broadcast Tools product.

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WHO TO CONTACT FOR HELP

If you have any questions regarding your product or you need assistance, please contact your distributor from whom you purchased this equipment.

If you would like more information about Broadcast Tools® products, you may reach us at:

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THANK YOU FOR CHOOSING BROADCAST TOOLS® BRAND PRODUCTS!

CAUTION!

Broadcast Tools® Products, as with any electronic device, can fail without warning. Do not use this product in applications where a life threatening condition could result due to failure.

NOTE:

This manual should be read thoroughly before installation and operation.

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Product Overview

The Broadcast Tools® Silence Sentinel® Basic is a basic stereo silence sensor designed to monitor any stereo or two independent monaural sources and generate alarms when silence is detected, but doesn't incorporate an audio switcher. Features include: front panel, remote control and relay monitoring; plug-in euroblock screw terminals; "Plug & Play" (NO POTS) installation; dipswitch selection of the following; silence detection of -20, -25, -30 and 35dB below zero reference; precise time delay from OFF to 5 minutes in 2 or 20 second increments; restore delay timing of OFF, 5, 30 and 90 seconds and two SPDT alarm relays with LED indicators. The Silence Sentinel® Basic may be set on a desktop, mounted on a wall or optional RA-1 rack shelf for mounting up to four units in 1-RU.

Features/Benefits

* May be configured for stereo or dual independent monaural operation.
* Left and right valid audio and alarm LED indicators.
* Dipswitch selection of silence detection of -20, -25, -30 and -35dB below zero reference.
* Dipswitch selection of time delay from OFF to 5 minutes in 2 or 20 seconds increments.
* Dipswitch selection of restore timing delay from OFF, 5, 30 and 90 seconds.
* Two independent SPDT alarm relays and LED indicators.
* Active balanced stereo input.
* Front panel and remote "Disable/Alarm Reset" switch with LED indicator.
* Front Panel Power/heartbeat LED.
* Plug-in euroblock screw terminals, mating plugs supplied.
* Domestic power supply included.
* The unit may be set on a desktop, mounted on a wall or optional RA-1 rack shelf for mounting up to four units in 1-RU with user supplied Velcro.

Installation Guidelines

Inspection

Please examine your Silence Sentinel® Basic for any damage that may have been sustained during shipping. If any is noted, please notify the shipper immediately and retain the packaging for inspection by the shipper. The package should contain the Silence Sentinel® Basic, this manual and/or CD and the 7.5 VDC @ 1 amp wall transformer. Manuals may also be downloaded from our web site.

Mounting

Mount the Silence Sentinel® Basic where it will be visible and rear panel accessible. The Silence Sentinel® Basic may be set on a desktop, mounted on a wall or optional RA-1 rack shelf for mounting up to four units in 1-RU using user supplied Velcro.

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Surge Protection

The Silence Sentinel® Basic has built-in resistance to voltage changes; we recommend that you use a power surge protector or line conditioner on the incoming AC line. Lightning strikes and/or other high voltage surges may damage your Silence Sentinel® Basic and connected equipment if it is not properly protected. For lightning protection devices, check out www.polyphaser.com and www.itwlinx.com.

UPS Standby Power System

We recommend that you connect your Silence Sentinel® Basic to a UPS system. A UPS helps minimize the risk to the Silence Sentinel® Basic and provides power during a power outage.

POWER 7.5 VDC connector

This is the connector used to power the unit. Never use any type of power supply other than the specified power supply.

Cable Preparation

The Silence Sentinel® Basic interfaces to external equipment through removable euroblock screw terminals. The terminals accommodate wire sizes from 16 - 28 AWG solid or stranded wire. Before installing a wire, remove the euroblock screw terminal plug and turn each capture screw fully counterclockwise. Strip each conductor to a length of 0.25" and insert the conductor fully into the terminal. Turn the capture screw fully clockwise to secure the conductor. Verify that no bare wires are exposed.

Connecting your equipment

Connect the audio source (air monitor, etc) to J1, the left and right inputs. Audio inputs may be balanced or unbalanced. When using unbalanced sources, feed the + input and jumper the minus (–) input to GND. These inputs are labeled LT- and LT+ for the left channel and RT- and RT+ for the right channel. Observe proper stereo phasing.

When used in dual monaural (independent) mode, the left input is ONE and the right input is TWO.

NOTE: If the audio source is a tuner or receiver, be sure to feed the input(s) from the fixed output, such as the tape monitor outputs.

CAUTION!

Installation of the Silence Sentinel® Basic in high RF environments should be performed with care. The station ground should be connected to the designated "GND" ground terminal.

K1 & K2 relay connections

External equipment to be controlled should be attached to the terminal J2 labeled KxNO, KxCM and KxNC (where x is the control relay number) for relay 1 or 2.

NOTE: If mechanical latching relays are required, we suggest the Broadcast Tools LR-5 (4PDT & SPST) mechanical latching relay.

Remote "Disable/Alarm Reset" input connection

The remote disable/alarm reset switch should be connected between the disable and ground terminals on J2. The remote disable/alarm reset input requires a sustained closure to ground. **NOTE: If the front panel disable/alarm reset switch is engaged (unit disabled), then the remote input is disabled.**

Power/HB LED

The flashing LED Indicates valid power and that the control processor is operating.

Programming Guidelines

DIPSwitch Setup

Locate dipswitch S1 on the front of the unit and follow the grid below.

Delay Time (SW1-9 ON)	SW1-1	SW1-2	SW1-3	SW1-4	Restore Delay Time	SW1-5	SW1-6	Delay Resolution	SW1-9
OFF / Instant	OFF	OFF	OFF	OFF	OFF/Instant	OFF	OFF	2 seconds	OFF
2 Sec (20 Sec)	ON	OFF	OFF	OFF	5 seconds	ON	OFF	20 seconds	ON
4 Sec (40 sec)	OFF	ON	OFF	OFF	30 seconds	OFF	ON		
6 Sec (1 Minute)	ON	ON	OFF	OFF	90 seconds	ON	ON		
8 Sec (1 Minute, 20 sec)	OFF	OFF	ON	OFF				Mode Select	SW1-10
10 Sec (1 Minute, 40 sec)	ON	OFF	ON	OFF				Stereo Mode *	OFF
12 Sec (2 Minutes)	OFF	ON	ON	OFF				Dual monaural mode.	ON
14 Sec (2 Minutes, 20 sec)	ON	ON	ON	OFF	Trip Level	SW1-7	SW1-8		
16 Sec (2 Minutes, 40 sec)	OFF	OFF	OFF	ON	- 20dB	OFF	OFF		
18 Sec (3 Minutes)	ON	OFF	OFF	ON	- 25dB	ON	OFF		
20 Sec (3 Minutes, 20 sec	OFF	ON	OFF	ON	- 30dB	OFF	ON		
22 Sec (3 Minutes, 40 sec)	ON	ON	OFF	ON	- 35dB	ON	ON		
24 Sec (4 Minutes)	OFF	OFF	ON	ON					
26 Sec (4 Minutes, 20 sec)	ON	OFF	ON	ON				K2 Pulse length *	JPR1
28 Sec (4 Minutes, 40 sec)	OFF	ON	ON	ON				2 Second	OFF
30 Sec (5 Minutes)	ON	ON	ON	ON				20 Seconds	ON

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Delay timing setup

The delay period is the time between when valid audio fails and when an alarm is triggered. The Silence Sentinel® Basic time delay is set by the first four switches on SW1, along with dipswitch 9. SW1-9 provides TWO second resolution when OFF. To provide longer time resolution, turn on SW1-9 which will provide 20 second resolution. The switches are set at the factory for a 2 second delay (SW1-1, ON factory default).

Restore timing setup

The restore period is the time between when valid audio returns and when the alarm is cleared. Restore time is set by SW1, switches 5 and 6. This function may be turned OFF by setting both switches OFF (factory default).

Trip (input sensitivity) level setup

The trip levels are referenced at zero. Switches 7 and 8 are used to set the stereo or dual monaural trip levels. The factory default is both switches OFF, (-20). We recommend setting the trip level to -25 for most installations.

Delay Resolution setup

SW1-9 sets the delay timing for either 2 seconds or 20 seconds. Factory default is (OFF) 2 seconds.

Stereo / Dual (Independent) monaural setup

SW1-10 determines stereo or dual monaural (Independent) operation. When this switch is OFF, (factory default) stereo operation is selected. With the switch ON, dual monaural (Independent) operation is selected.

K2 function pulse length setup

With a jumper over the ON position of JPR1, K2 generates a 20 second pulse. When the OFF position is selected, a 2 second pulse is set (Factory default). This is only operational with the unit in stereo mode. This function could be used to trigger an external AC power relay to reboot equipment. In dual monaural (Independent) mode, K1 is associated with input one and K2 is associated with K2.

NOTE: The front panel must be removed to access this jumper (refer to the configuration and wiring sheet) in the appendix.

Operational Guidelines

Front panel descriptions

The front panel **DIP switch** setup functions are laid out using the grid on page SIX of the manual. The front panel disable switch is used to disable or reset an alarm condition. The switch is a latching type device. When engaged, the unit is disabled. To remotely disable the unit, leave the front panel switch enabled (out) and apply a ground (sustained) to the remote disable input on the rear panel.

The **LED indicators** are described on the top cover label and in the appendix.

Stereo Mode operation

When the Silence Sentinel® Basic is "Enabled", it will trigger in the absence of audio (see trip level setup) on either or both channels after the delay time has expired (See delay dipswitch SW1-1 thru 4 and SW1-9) which will cause the following action:
1 - The front panel "OK LT" and/or "OK RT" audio LED's will extinguish.
2 - The failed alarm led's "ALM LT" and/or "ALM RT" and relay K1 will activate.
3 – K2 pulses for either 2 or 20 seconds.
Note: K2 will generate a pulse of a duration determined by JPR1.

When both channels return and the restore time delay has expired (if enable), the following action occurs:
1 – K1 opens.
2 - The front panel "OK LT" and "OK RT" audio LED's will illuminate
3 - Either or both "ALM LT" or "ALM RT" led indicators will stay illuminated to provide history of the alarm until reset. To reset an alarm, press (pull the remote disable input to ground) in the disable (alarm reset) switch and then press again to release the switch.

Dual Monaural (Independent) Mode Operation

When the Silence Sentinel® Basic is enabled, it will trigger in the absence of audio (see trip level setup) on each of the independent channels after the delay time has expired (See delay dipswitch SW1-1 thru 4 and SW1-9).

The Silence Sentinel® Basic when triggered will cause the following action:
1 - The failed "ALM LT1" and/or "ALM RT2" led(s) will illuminate.
2 - Either or both relays K1 and K2 will close.

When **either audio channel returns,** and the restore time delay has expired (if enabled), the following action occurs:
1 - Either or both relays (K1 and K2) will open.
2 -The failed "ALM LT1" and/or "ALM RT2" led indicators stay illuminated to provide history of the alarm. To reset an alarm, press (pull the remote disable input to ground) in the disable (alarm reset) switch and then press again to release the switch.

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Input Level:	-15 to +24 dBu, 22 K ohm, balanced.
Silence Sense trip levels:	-20, -25, -30 and -35dB below zero reference.
Alarm Delay:	OFF to 5 minutes in 2 or 20 seconds increments.
Restore Delay:	OFF, 5, 30 and 90 seconds.
Disable/Enable Input:	Sustained closure to ground. Pulled up to 5 VDC.
Relays, K1 and K2:	Each relay with SPDT dry contacts, 30 VDC @ 1 Amp.
Connectors:	Removable euroblock screw terminals.
Power supply:	7.5 VDC only @ 500ma or 1 Amp PS supplied. 2.1mm ID x 5.5mm OD coaxial connector. Surge protected.
Operating Temperature:	-40°F to +185°F (-40°C to +85°C)
Size:	6.18” x 3.70” x 1.42” (L,W,H)
Weight:	1.0 lb.
Options:	* CE certified universal input power supply. * RA-1, 1-RU rack shelf. Note: User supplied Velcro may be used to secure the product to the RA-1 shelf.

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SPECIFICATIONS

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The term "Buyer" as used in this document refers to and includes both (but only) (a) any person or entity who acquires such an item for the purpose of resale to others (i.e., a dealer or distributor of an item), and (b) the first person or entity who acquires such an item for such person's or entity's own use.

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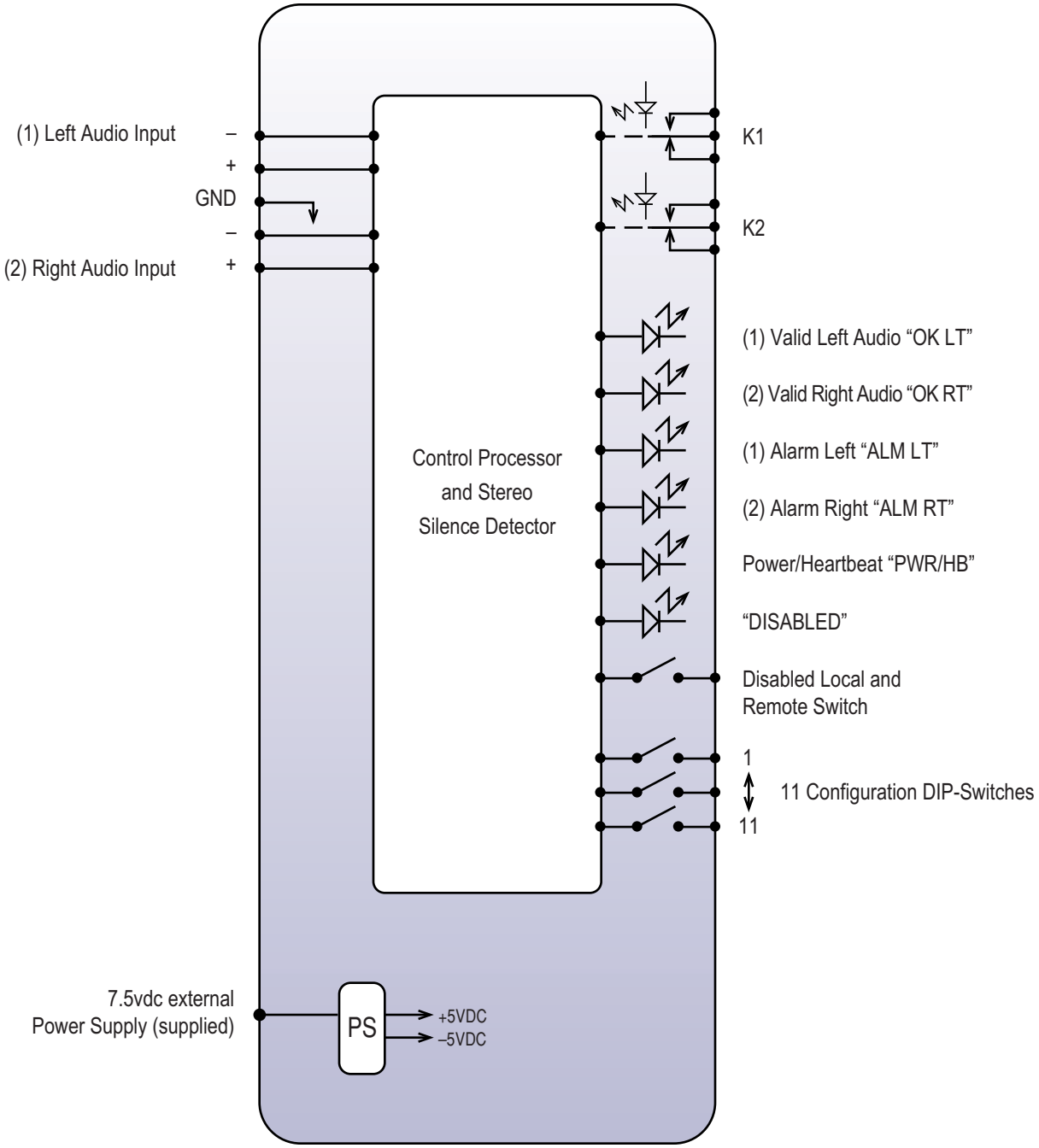
Functional Diagram



(Unit in Independent, Dual Monaural mode)

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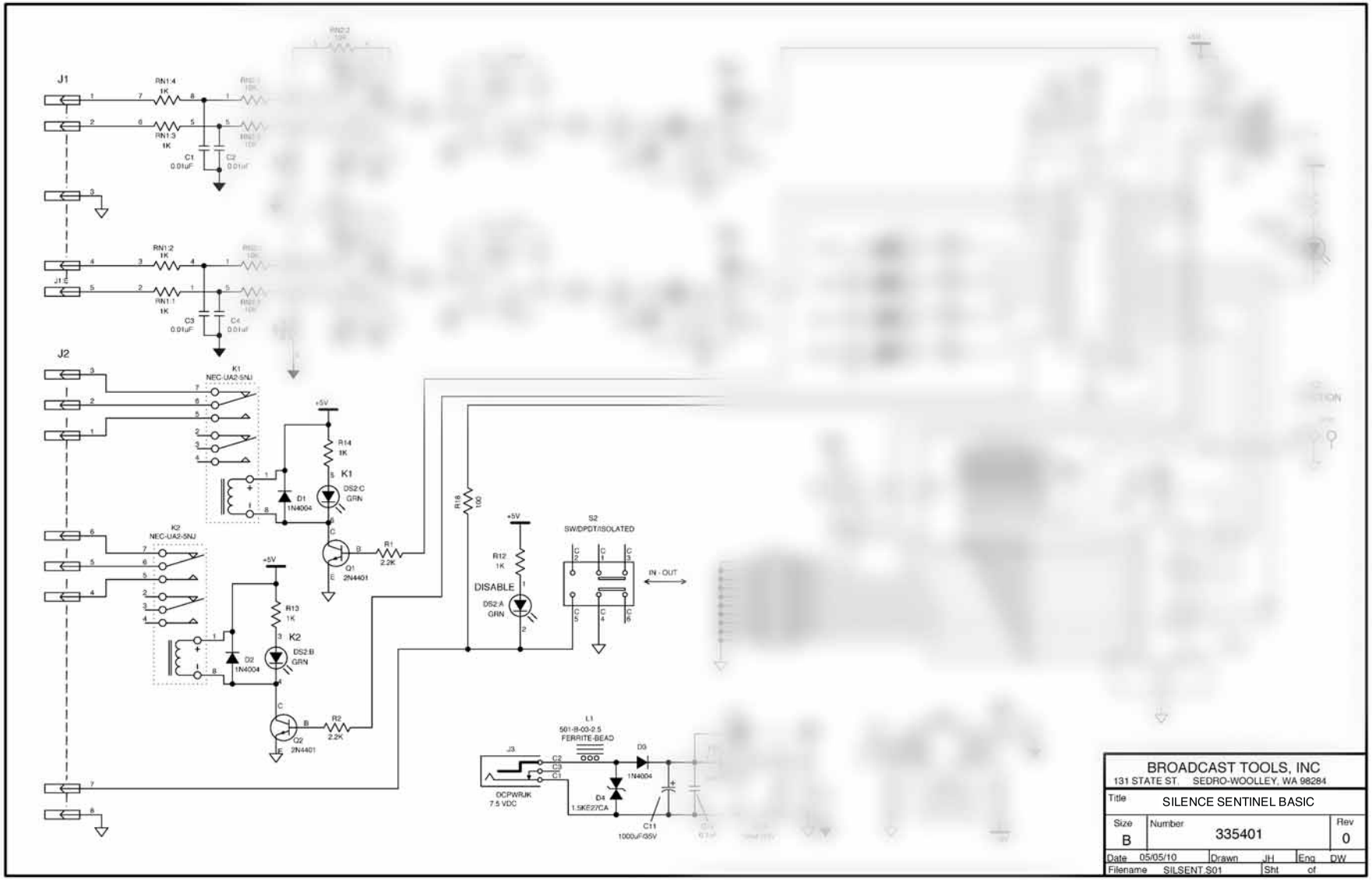
Fractional Schematic



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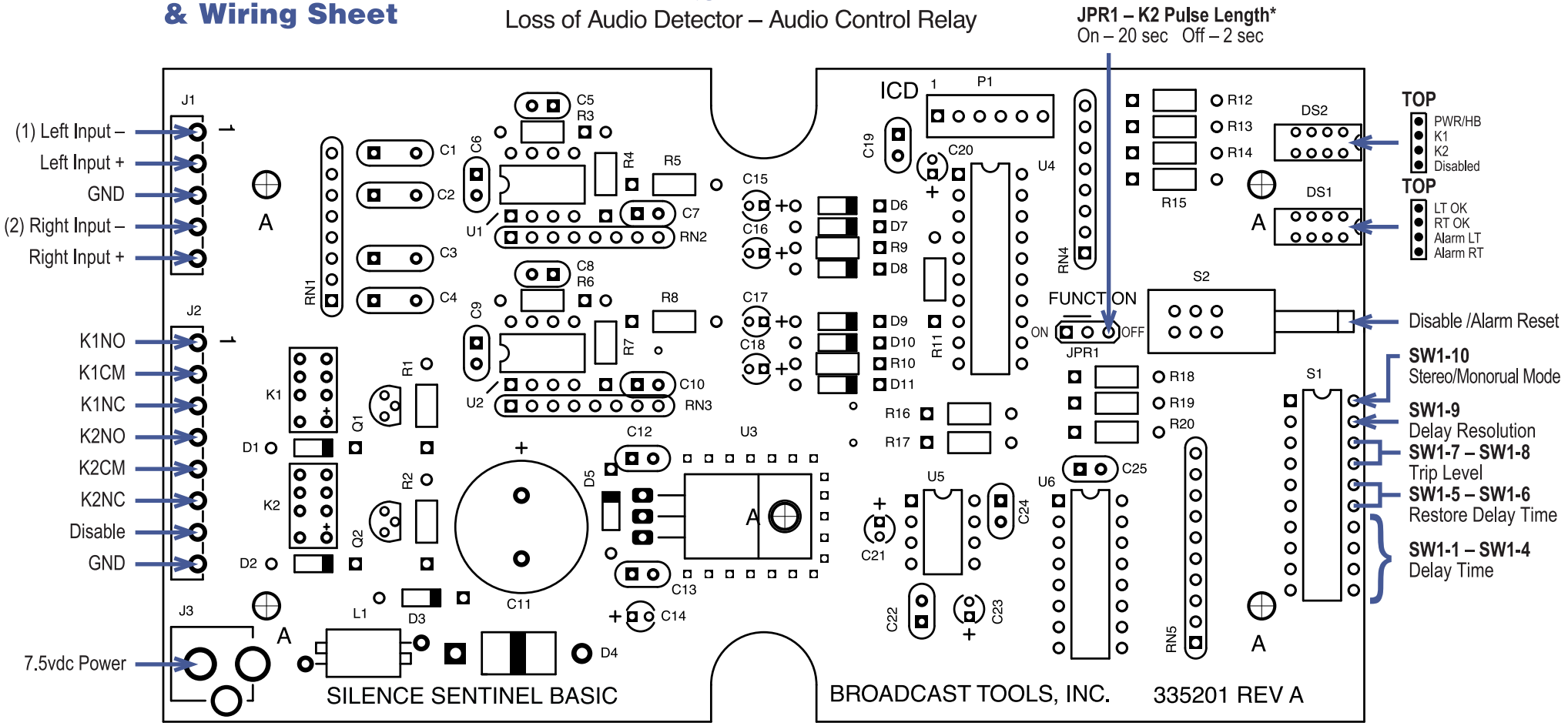
Configuration & Wiring Sheet

SILENCE *Sentinel*® Basic

Loss of Audio Detector – Audio Control Relay



SW1-1	SW1-2	SW1-3	SW1-4	Delay Time (SW1-9 ON)
OFF	OFF	OFF	OFF	OFF / Instant
ON	OFF	OFF	OFF	2 Sec (20 Sec)
OFF	ON	OFF	OFF	4 Sec (40 sec)
ON	ON	OFF	OFF	6 Sec (1 Minute)
OFF	OFF	ON	OFF	8 Sec (1 Minute, 20 sec)
ON	OFF	ON	OFF	10 Sec (1 Minute, 40 sec)
OFF	ON	ON	OFF	12 Sec (2 Minutes)
ON	ON	ON	OFF	14 Sec (2 Minutes, 20 sec)
OFF	OFF	OFF	ON	16 Sec (2 Minutes, 40 sec)
ON	OFF	OFF	ON	18 Sec (3 Minutes)
OFF	ON	OFF	ON	20 Sec (3 Minutes, 20 sec
ON	ON	OFF	ON	22 Sec (3 Minutes, 40 sec)
OFF	OFF	ON	ON	24 Sec (4 Minutes)
ON	OFF	ON	ON	26 Sec (4 Minutes, 20 sec)
OFF	ON	ON	ON	28 Sec (4 Minutes, 40 sec)
ON	ON	ON	ON	30 Sec (5 Minutes)

SW1-5	SW1-6	Restore Delay Time
OFF	OFF	OFF/Instant
ON	OFF	5 seconds
OFF	ON	30 seconds
ON	ON	90 seconds

SW1-7	SW1-8	Trip Level
OFF	OFF	- 20dB
ON	OFF	- 25dB
OFF	ON	- 30dB
ON	ON	- 35dB

SW1-9	Delay Resolutuion
OFF	2 seconds
ON	20 seconds

SW1-10	Stereo/Monrual Mode
OFF	Stereo Mode
ON	Independent (dual monaural) Mode

JPR1	K2 Pulse length*
OFF	2 Seconds
ON	20 Seconds

* K2 Functions as a Pulse Relay stereo Mode only.

Modification date: 03/09/11

Using Multiple AUDIO (Silence) *Sentinel*® »BASIC'S on the VAD-2 Plus or other devices.